Cargill Salt

Watkins Glen Plant
518 East 4th Street
Watkins Glen, NY 14891

May 18, 2007

Luis Rodriguez
Underground Injection Control Section
U. S. Environmental Protection Agency Region 2
290 Broadway
New York, New York 10007-1866

Ref: UIC Permit NYU105431

Dear Mr. Rodriguez:

Mechanical integrity demonstrations were performed on Wells 23 and 24 at our Watkins Glen, New York facility using the water-brine method; reports are enclosed. The demonstrations were successful, and the wells have been returned to solution mining service. A planned test of Well 22 was postponed due to a buildup of salt in the well casing; this well will be kept out of service until a test can be performed in June.

If you have any questions, please call me at 970-875-0124.

Sincerely,

Michael J. Schumacher
Solution Mining Manager

enclosures

cc: L. Meeder
L. Collart, NYSDEC

Cargill

CARGILL INCORPORATED
WATER-BRINE INTERFACE
MECHANICAL INTEGRITY TEST REPORT

Address

Cargill Salt
Watkins Glen Plant
518 E. 4th Street
Watkins Glen , New York 14891
(607) 535-6300

General Information

UIC Permit	**NYU105431**
Field	**Watkins Glen**
Test well	**23**
Reference well	**21**
Other wells in gallery	**19,20,22,24**
Test well location	**Lat. 42°-23'-05", Long. 76°-51'-46"**
	Watkins Glen, New York
API No.	**31-097-21631**
Test Date	**10-May-07**
Test fluid	**Water**
Result	**PASSED TEST**

Test well data

Well no.	**23**		
Depth of surface casing	**965**	ft.	**Drilling record**
Depth to top of salt formation	**1764**	ft.	**9/96 Gamma ray log**
Depth to top of cavern	**1750**	ft.	**10/03 gamma ray log**
Depth of production casing	**1756**	ft.	**10/03 gamma ray log**
Depth of tubing (if present)	**none**	ft.	
Total depth	**2178**	ft.	**10/03 gamma ray log**
Original total depth	**2684**	ft.	**Drilling record**
Outer diameter of production casing	**7**	in.	**Drilling record**
Outer diameter of tubing (if present)	**none**	in.	
Capacity of casing or annulus	**1.6535**	gpf	
Volume of casing or annulus	**2904**	gals.	
Normal operating pressure	**360**	psig	
Mode of last 24 hours of operation	**Water Injection**		

All depths referenced to wellhead , elev. 445

Reference well data

Well no.	**21**		
Depth of surface casing	**948**	ft.	**Drilling record**
Depth to top of salt formation	**1758**	ft.	**12/92 neutron log**
Depth to top of cavern	**2008**	ft.	**04/06 gamma ray log**
Depth of production casing	**2195**	ft.	**11/03 Sonar Survey**
Depth of tubing (if present)	**none**	ft.	
Total depth	**2573**	ft.	**11/03 Sonar Survey**
Original total depth	**2675**	ft.	**Drilling record**
Outer diameter of production casing	**7**	in.	**Drilling record**
Outer diameter of tubing (if present)	**none**	in.	
Capacity of casing or tubing	**1.6535**	gpf	
Volume of casing or tubing	**3629**	gals.	

All depths referenced to wellhead , elev. 447

Target Depth for Interface

Normally 50 feet above the end of the casing or the cavern roof, whichever is shallower

Depth **1706** ft.

Instrumentation

Well	Test	Reference
Manufacturer	**Paroscientific**	**Paroscientific**
Model	**760-1K**	**765-1K**
Serial No.	**91030**	**101331**
Accuracy	**0.01%**	**0.01%**
Precision	**0.001 psi**	**0.001 psi**

Preparation

If the casing of the test well was most recently used for brine production, flush with water to remove any crystallized salt.

Date and time test well was flushed	**05/04/07**
Approximate volume in gallons	**20,000**
Shut-in period with water in casing	**3 days**
Comments	
Second date and time well was flushed	
Approximate volume in gallons	
Shut-in period with water in casing	
Comments	

The test well must be bled back to ensure that it is filled with a fluid of uniform density. Bleed back at least the volume of the casing or annulus.

Date test well was bled back	**05/07/07**
Approximate volume in gallons	**54,000**
Specific gravity of fluid	**1.184**
Comments	

The reference well must be bled back to ensure that it is filled with a fluid of uniform density. Bleed back at least the volume of the tubing or casing.

Date and time ref well was bled back	**05/07/07**
Approximate volume in gallons	**30,000** gals
Specific gravity of fluid	**1.188**
Comments	

Set Interface

Test fluid	**Water**
Specific gravity of test fluid	**1.000**
Specific gravity of brine	**1.184**

Calculate maximum permissible injection rate and target pressure differential.

Capacity of casing or annulus		Allowable velocity		Maximum inj. rate	
1.6535 gpf	x	20 fpm	=	**33**	gpm

Target interface depth x gradient diff. = target pressure diff.
1706 ft. x (1.184 - 1.000) X 0.433 = 135.9 psi

Date	**05/08/07**				change
	Time	Test Well	Ref. Well	Diff.	in diff.
Pressures before injection	**12:05**	**58.206**	**69.700**	**-11.494**	
Pressures during injection	**13:50**	**194.249**	**74.285**	**119.964**	**131.458**
Pressures after injection	**14:20**	**196.695**	**75.279**	**121.416**	**132.910**

All pressures measured in psia

Calculated final interface depth
132.910 psi / ((1.184 - 1.000) X 0.433) = 1668 ft.

Note : Unable to set interface below calculated depth of 1668 feet

Temperature Stabilization Period

	Date	Time	Test Well	Ref. Well	Diff.	change in diff.
Start Stabilization	**05/08**	**14:20**	**196.695**	**75.279**	**121.416**	
Inter. press	**05/09**	**08:10**	**231.840**	**111.550**	**120.290**	**-1.126**
Inter. press	**05/09**	**12:45**	**233.002**	**113.094**	**119.908**	**-1.508**
Inter. press	**05/09**	**14:45**	**232.580**	**112.783**	**119.797**	**-1.619**
Inter. press	**05/09**	**16:45**	**232.192**	**112.536**	**119.656**	**-1.760**
Start of test	**05/10**	**06:05**	**230.464**	**111.608**	**118.856**	**-2.560**
Total time		**39**	**hours**			

(Minimum time is 36 hours.)

The observed change in differential pressure does not indicate significant interface movement during this period.

Test Period

	Date	Time	Test Well	Ref. Well	Diff.	change in diff.
Start of test	**05/10**	**06:05**	**230.464**	**111.608**	**118.856**	**0.000**
Inter. press	**05/10**	**07:05**	**230.373**	**111.558**	**118.815**	**-0.041**
Inter. press	**05/10**	**08:05**	**230.276**	**111.515**	**118.761**	**-0.095**
Inter. press	**05/10**	**09:05**	**230.187**	**111.469**	**118.718**	**-0.138**
Inter. press	**05/10**	**10:05**	**230.090**	**111.420**	**118.670**	**-0.186**
Inter. press	**05/10**	**11:05**	**229.984**	**111.367**	**118.617**	**-0.239**
Inter. press	**05/10**	**12:05**	**229.889**	**111.309**	**118.580**	**-0.276**
Inter. press	**05/10**	**13:05**	**229.796**	**111.261**	**118.535**	**-0.321**
End test	**05/10**	**14:05**	**229.709**	**111.212**	**118.497**	**-0.359**

Test Period	**8**	hrs
Average pressure change	**-0.045**	psi/hr

Maximum allowable pressure change is 0.05 psi/hr over 8 hours.

If the test was conducted in accordance with the method approved in the USEPA notice published in the Federal Register of August 18,1989, page 34169-34171 (as amended in Federal Register of November 14, 1989, page 47451) and the rate of pressure change during the test period was less than 0.05 psi/hour, the well has passed the test and demonstrated internal mechanical integrity.

Result : **PASSED TEST**

Comments

Test and reference well pressures were read simultaneously during the eight-hour test period.

Person conducting test: **Michael J. Schumacher**
Solution mining manager
Cargill Salt
(970)875-0124

Witnessing field personnel: **None**

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for the submission of false information, including the possibility of fine and imprisonment for knowing violations.

Signature of owner/authorized agent : _____

Michael J. Schumacher
Solution mining manager
Cargill Salt
916 S. Riverside Ave.
St. Clair, MI 48079
(810) 326-2762

Attachments :

Field data sheets (1)
Gauge calibration certificates

FIELD DATA SHEET

TEST WELL 23 INSTRUMENT S/N 91030

REFERENCE WELL 21 INSTRUMENT S/N 101331

DATE	TIME	TEST PRESS.	REF PRESS.	DIFFERENCE	OPER. INIT.	REMARKS
5/8/07	12:05	58.206	69.700	- 11.494	MA	STATIC
	12:09					START PUMPING
	13:45					SHUT IN
	13:50	194.249	74.285	119.964	MA	STATIC
	14:20	196.695	75.279	121.416	MA	PUMPED 210 GALS
5/9/07	8:10	231.840	111.550	120.290	MA	TEMP STABILIZATION
	12:45	233.002	113.094	119.908	MA	SHUT IN WELL 20
	14:45	232.580	112.783	119.797	MA	
	16:45	232.192	112.536	119.656	MA	
5/10/07	6:05	230.464	111.608	118.856	MA	START TEST
	7:05	230.373	111.558	118.815	MA	
	8:05	230.276	111.515	118.761	MA	
	9:05	230.187	111.469	118.718	MA	
	10:05	230.090	111.420	118.670	MA	
	11:05	229.984	111.367	118.617	MA	
	12:05	229.889	111.309	118.580	MA	
	13:05	229.796	111.261	118.535	MA	
	14:05	229.709	111.212	118.497	MA	COMPLETE TEST